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From: Kay, Robert [rtkay@usgs.gov]
Sent: 6/24/2019 5:09:45 PM
To: Nordine, John [nordine.john@epa.gov]
Subject: Techalloy May 2019 Monthly Progress Report

John--here is my review of the May 2019 Monthly Progress Report for the Techalloy Facility in Union, Illinois.

EW-2 Field Investigation: 0.15 ppb of what compound was detected in P2-5?
Provide a figure showing the location of the various wells/piezometers sampled as well as EW-2.

I cannot decipher how the T and S values were calculated from the information provided in table 2 or the text. AT THE VERY LEAST Techalloy needs to provide a reference for how these numbers were calculated and where the data came from. As near as I can tell this analysis relies on data from EW-1, which was supposed to be the background wells (i.e. no response to pumping at this well, just background). Even with this information, I would be hesitant to accept the results of this analysis. 1. EW-2 is likely responding to background fluctuations, not drawdown. at the very least, it's responding to both processes. 2. what is the magic behind a 750 ft radius? is this the point where drawdown is assumed to equal zero? it seems unlikely that if drawdown is 1.63 ft at 690 ft from the pumped well it will be 0 at 750 ft from the pumped well. 3. note the drawdown at P-3, located 200 ft from EW-2, was about 1.6 ft. 4. The T is based on a K and h value from the Weston pump test, which guarantees the T value will be identical, or nearly identical, to the test results from EW-1 (T=K*h). This is an incorrect way to calculate T and S based on the EW-2 pump-test data. The goal of this testing is to get an independent analysis of T and S, not to re-package the EW-1 test.

The typical way hydrologists calculate T and S from multiple-well, constant-discharge aquifer tests, and the way I would strongly recommend it be done here, is to use a curve matching technique. For the curve matching technique the time-drawdown data from the P well located furthest from EW-2, corrected for change in background fluctuations and barometric pressure, is plotted on a log-log scale. The time-drawdown data is then matched to a type curve and various values of time, drawdown, and values from the type curve are then plugged into the appropriate equations to calculate T and S. As I recall this is how Weston did it, so Autumwood should be familiar with the process. Note that we asked Techalloy to analyze the data using this technique in our previous review of the aquifer-test data.

Ex. 6 Personal Privacy (PP) Well and Pumpage: per an earlier comment, it would probably be wise to try and get a field-based idea of the pumping rate from each of the Ex. 6 Personal Privacy (PP) s, as well as a depiction of the precise location of these wells. I know it won't be easy, but it might be useful to estimate the drawdown associated with these wells after 13 hours of pumping.

Upcoming Events: can Techalloy provide some idea of when some of these long-standing activities will be finalized? We've been hearing for months about the lease agreement and the NPDES permit. I know things take time, but some of these wait times border on negligence.

Table 6--admittedly not a major issue at this time, but the VOC concentrations in the effluent are trending up over the past few months.

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